# Diets high in animal fats increase risk of breast cancer, while painkillers lower risk, studies say

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A diet that is rich in animal fats from red meat and high fat dairy products increases the risk of breast cancer, say studies from the United States and the United Kingdom. Meanwhile, a third study says that regular, long term use of aspirin and other non-steroidal anti-inflammatory drugs reduces the risk of breast cancer.

The first study, from the United States, showed that the rate of breast cancer among premenopausal women who ate the diet that was highest in animal (but not vegetable) fats was a third higher than that in women who ate the diet that was lowest in animal fats (*Journal of the National Cancer Institute* 2003; 95:1079-85). Few studies have focused on premenopausal women.

The study looked at 90 655 premenopaual women from the nurses health study II, a new study involving registered nurses aged between 26 and 46 years.

The corresponding author, Dr Eunyoung Cho, an epidemiologist at Brigham and Women's Hospital, Boston, and an instructor in medicine at Harvard Medical School, said, "Diet during early adulthood may have a different impact than later exposure."

The participants completed two questionnaires on how often they ate particular foods—one at the beginning of the study in 1991 and the second in 1995. The report is based on follow up at eight years. The questionnaires asked about intake of more than 100 different items of food in the previous year. The results from the two questionnaires were averaged, which "could reduce the random error and reflect longer term intake that would be relevant for chronic diseases, including breast cancer," said Dr Cho.

The study divided the data on the women's intake of animal fat into fifths. Women whose intake was above the highest quintile had the highest rate of breast cancer. In the eight years of follow up, 714 women in the study developed invasive breast cancer.

Risk ratios for the successive groups, with the lowest fifth as the reference group, were 1.28, 1.37, 1.54, and 1.33 (95% confidence intervals ranged from 1.02 to 1.73 (P for trend = 0.002)). Women in the group with the highest intake of animal fat were also more likely to be smokers and to have more than three children and had a higher body mass index than women in the other groups.

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The rate of breast cancer in the quintile of women who ate the diet highest in animal fat was a third higher than that in the quintile who ate the diet lowest in animal fat

However, the hypothesis that a high fat diet causes breast cancer by increasing concentrations of oestrogen doesn't make sense, Dr Cho said. If it were true, a diet high in animal fat and a diet high in vegetable fat should both lead to higher rates of cancer, and that wasn't the case. "We suspect it's not animal fat per se, but some other component," Dr Cho said. Carcinogens in cooked red meat and natural, fat soluble hormones in cows' milk might play a role, she said.

The second study, from the United Kingdom, published in the *Lancet* (2003;362:212) by Dr Sheila Bingham and colleagues at the Medical Research Council's Dunn Human Nutrition Unit in Cambridge, looked at 25 630 men and women aged 45-74 living in Norfolk who participated in the European prospective investigation of cancer and nutrition.

All participants in the UK study completed a food frequency questionnaire, and 93% also completed a seven day food diary. There were 168 cases of breast cancer in the 13 070 women who completed both types of report. Each woman with breast cancer was compared with four healthy matched controls.

The study found that the seven day diary method of measuring diet showed a significant relation between intake of saturated fats and breast cancer (hazard ratio 1.22 (95% confidence interval 1.06 to 1.40)) but that the food frequency questionnaire did not (1.10 (0.94 to 1.29)).

Women with breast cancer had a mean age of 59 years, compared with 43 in the women in the US study; 57% were menopausal and 25% were perimenopausal.

Results from the seven day food diaries showed that the risk of breast cancer in the women in the top fifth for saturated fat intake was twice that in the women in the lowest group.

In an accompanying commentary Dr Ross Prentice, of the Fred Hutchinson Cancer Center in Seattle, Washington, said, "Diaries are more precise and reliable."

Dr Prentice told the *BMJ* that food frequency questionnaires are usually done by blacking in one of several dots on a form that can be read by machines. Overweight people may underestimate their past energy intake.

Seven day food diaries are more expensive to interpret, as staff need to convert handwritten information into dietary constituents and enter the information into a computer, he said.

The third study showed that routine use of non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen offers protection against breast cancer among women aged 50 to 79. Dr Randall Harris and colleagues from Ohio State University studied 81 741 postmenopausal women who had taken ibuprofen and other analgesics for more than four years, as part of the women's health initiative study. He presented his results at a meeting of the American Association for Cancer Research last week.

He said that about a third of the women were taking NSAIDs, including aspirin, at least twice a week for osteoarthritis, chronic headaches, fibromyalgia, and other problems. The other women were not taking painkillers regularly. Women who took ibuprofen for more than 10 years had a relative risk reduction of nearly 50%, compared with women who seldom or never took the drugs. Women who had taken aspirin for more than 10 years had a relative risk reduction of 22%.

Dr Harris, professor of epidemiology at the College of Medicine and Public Health at Ohio State University, told the *BMJ* that the risk reduction in women who took NSAIDs was the same regardless of risk factors for breast cancer, such as family history. □